

TRANSMITTAL LETTER TO THE UNITED STATES

DESIGNATED/ELECTED OFFICE (DO/EO/US)
CONCERNING A FILING UNDER 35 U.S.C. 371

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR

09/744999

INTERNATIONAL APPLICATION NO.
PCT/EP99/05550INTERNATIONAL FILING DATE
31 July 1999PRIORITY DATE CLAIMED
22 August 1998

TITLE OF INVENTION

DATA LINK BETWEEN TWO COMPUTERS, AND METHOD FOR TRANSMITTING DATA BETWEEN SAID
COMPUTERS

APPLICANT(S) FOR DO/EO/US

Thomas ENGEL; Ernst-George HAFNER; and Christoph MEINEL

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☒ This is an express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
4. ☒ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. ☒ A copy of the International Application as filed (35 U.S.C. 371 (c) (2))
 - a. ☒ is transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☐ has been transmitted by the International Bureau.
 - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☒ A translation of the International Application into English (35 U.S.C. 371(c)(2)).
7. ☒ A copy of the International Search Report (PCT/ISA/210).
8. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3))
 - a. ☒ are transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☐ have been transmitted by the International Bureau.
 - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
 - d. ☐ have not been made and will not be made.
9. ☒ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
10. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)).
11. ☒ A copy of the International Preliminary Examination Report (PCT/IPEA/409).
12. ☐ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)).

Items 13 to 20 below concern document(s) or information included:

13. ☒ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
14. ☒ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
15. ☐ A **FIRST** preliminary amendment.
16. ☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
17. ☐ A substitute specification.
18. ☐ A change of power of attorney and/or address letter.
19. ☐ Certificate of Mailing by Express Mail
20. ☐ Other items or information:

U.S. APPLICATION NO. (IF KNOWN) 09/744999		INTERNATIONAL APPLICATION NO. PCT/EP99/05550		ATTORNEY'S DOCKET NUMBER A-7281	
--	--	--	--	---	--

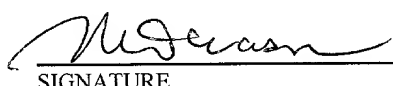
21. The following fees are submitted: BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)) : <input type="checkbox"/> Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO \$1,000.00 <input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO \$860.00 <input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO \$710.00 <input type="checkbox"/> International preliminary examination fee paid to USPTO (37 CFR 1.482) but all claims did not satisfy provisions of PCT Article 33(1)-(4) \$690.00 <input type="checkbox"/> International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(1)-(4) \$100.00 <div style="text-align: right;">ENTER APPROPRIATE BASIC FEE AMOUNT =</div>				CALCULATIONS PTO USE ONLY	
				\$1,000.00	
Surcharge of \$130.00 for furnishing the oath or declaration later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492 (e)).				\$0.00	
CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE		
Total claims	18 - 20 =	0	x \$18.00	\$0.00	
Independent claims	2 - 3 =	0	x \$80.00	\$0.00	
Multiple Dependent Claims (check if applicable) <input type="checkbox"/>				\$0.00	
TOTAL OF ABOVE CALCULATIONS =				\$1,000.00	
Reduction of 1/2 for filing by small entity, if applicable. Verified Small Entity Statement must also be filed (Note 37 CFR 1.9, 1.27, 1.28) (check if applicable). <input type="checkbox"/>				\$0.00	
SUBTOTAL =				\$1,000.00	
Processing fee of \$130.00 for furnishing the English translation later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492 (f)).				\$0.00	
TOTAL NATIONAL FEE =				\$1,000.00	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31) (check if applicable). <input checked="" type="checkbox"/>				\$40.00	
TOTAL FEES ENCLOSED =				\$1,040.00	
				Amount to be: refunded	\$
				charged	\$

<input checked="" type="checkbox"/> A check in the amount of \$1,040.00	to cover the above fees is enclosed.
<input type="checkbox"/> Please charge my Deposit Account No. _____ A duplicate copy of this sheet is enclosed.	in the amount of _____ to cover the above fees.
<input checked="" type="checkbox"/> The Commissioner is hereby authorized to charge any fees which may be required, or credit any overpayment to Deposit Account No. 08-2455	A duplicate copy of this sheet is enclosed.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

Mitchell B. Wasson - Reg. 27,408
 Hoffman, Wasson & Gitler, P.C.
 2361 Jefferson Davis Highway - Suite 522
 Arlington, VA 22202


 SIGNATURE
 Mitchell B. Wasson
 NAME
 27,4008
 REGISTRATION NUMBER
 February 22, 2001
 DATE

**DATA LINK BETWEEN TWO COMPUTERS, AND
METHOD FOR TRANSMITTING DATA BETWEEN SAID COMPUTERS**

BACKGROUND OF THE INVENTION

Any transmission of data between two computers raises questions of how secure such a transmission is against unauthorized interception or even manipulation of the data or the transmission processes by unauthorized third parties. For companies, banks, and government authorities, an additional security concern arises if their own enterprise-wide computer network is to be protected against attacks from the outside, e.g., from the Internet. Especially if there is an active connection between the enterprise and the Internet, unauthorized access to the internal computer network of an enterprise can jeopardize data security in this computer network.

As described in "The Internet, From Access to 'Zine", AT&T Technology, 1993, pp. 2-9, authored by Deborah Mills-Scofield, and "Firewalls and Security on the Internet, 1996, ISBN 3-89319-875-x, authored by Cheswick and Bellovin, various computer systems with data links of different designs for data transmission are known. So-called firewalls are used to solve the security problems. At the firewalls the (TCP/IP-) data packets are analyzed, unauthorized access is denied, and authorized requests are permitted. Firewalls do not, however, represent a physical separation between the internal computer network of an enterprise and the outside world. Rather, the data packets are analyzed by software (see Pp. 64, Sect. 3.3, Para. 1 and Page 88, Sect. 3.4, Para. 1 in "Firewalls and Security on the Internet".

As described in "Firewall Systems", authored by N. Pohlmann, a computer system of the type described above is known. A so-called application gateway is used as a lock element between two computers in a computer link. The first computer is, for example, part of the Internet, and the other computer is part, for example, of an in-house intranet. The application gateway ensures the physical disconnection of the two computers in the sense that when one computer is accessed from the other, the

accessing computer appears not at its own address, but rather at the address of the application gateway so that individual data transfer processes can no longer be carried out. At the application gateway, software (a so-called proxy) is made available which during the data transfer moves the data packets back and forth between the computers. Even in the case of the computer system described in this article, the data packets are analyzed by software.

By manipulating these software-implemented firewalls from the outside or through some other unauthorized access, it is therefore still possible to obtain access to an in-house computer network from the outside and to threaten data security in an enterprise-wide computer network. If the security requirements of an enterprise are especially stringent, the known firewalls cannot offer adequate security.

It is therefore the object of this invention to make available more effective security mechanisms for stopping attacks by unauthorized third parties on computers on a data link.

SUMMARY OF THE INVENTION

The present invention pertains to a computer system that comprises at least one computer, a second computer, and a data link between the first computer and the second computer for the purpose of transmitting data, whereby in the data link there is a lock element. Between the first computer and the lock element there is a first flood gate (inner flood gate [IFG]). Between the second computer and the lock element there is a second flood gate (outer flood gate [OFG]). When the first flood gate is closed the second flood gate is opened and, vice versa, when the second flood gate is closed the first flood gate is opened.

The invention also pertains to a process for transmitting data between a first computer and a second computer via a data link, whereby the data is transmitted in one direction by the first computer through an opened first flood gate to a

lock element. When the first flood gate is closed, and the second flood gate is opened, data is transmitted through the second flood gate to the second computer. When the data moves in the opposite direction the process takes place in the opposite sequence.

The first computer can be, for example, part of an internal enterprise-wide computer network. The second computer can be designed as a computer in the World-Wide Net.

The invention proposes, based on the computer system of the type mentioned above, that the data link be designed as an Integrated Services Digital Network (ISDN) connection according to the Net Terminal Base Adapter (NTBA) Standard, that the transfer of data from the first computer be carried out via a third computer that is located in a common computer network with the first computer and vice versa via the lock element to the second computer, whereby the establishment of a data link and the transfer of data between the third computer and the lock element and between the second computer and the lock element are carried out via the two B-channels of the ISDN connection according to the NTBA Standard.

According to the invention, technical provisions are thus made in the computer system that ensure that it is not technically possible to establish a data link from the first computer to the third computer at the same time as a link is established from the third computer to the second computer. To accomplish this, it is proposed that in each case the two B-channels of an ISDN connection be used to provide a data link from the first computer to the third computer or from the third computer to the second computer. This will make it possible to meet very rigorous security requirements at comparatively low cost.

An ISDN connection according to the NTBA Standard has two bearer channels (B-channels) and a data channel (D-channel). Thus, the ISDN-NTBA configuration allows a maximum of two data-transfer links at one time. The data link is designed in

such a way that when the third computer establishes a connection with the lock element in order to transfer data, this requires the two B-channels of the ISDN-NTBA configuration. The lock element is dialed up via one B-channel, and the data transfer link to the lock element is established via the second B-channel (the first flood gate is opened). It is therefore impossible to set up a link between the lock element and the second computer at the same time since the ISDN-NTBA configuration no longer has a free B-channel available (the second flood gate cannot be opened).

If, in the opposite situation, there is already a connection between the second computer and the lock element (second flood gate is opened) via one of the two B-channels, the third computer can no longer set up a link to the lock element (the first flood gate cannot be opened) since, as explained above, this requires both B-channels of the ISDN-NTBA configuration. By making dual use of the same NTBA, i.e., on the one hand at the third computer and on the other at the lock element, the lock function of the data link of the computer system according to the invention can be implemented in a simple fashion.

The lock element is designed as, e.g., a computer. The data link of the computer system according to the invention produces a slight time delay in data transfer that the user will hardly notice. During this time delay the flood gates are opened and closed and the data to be transferred is analyzed. By properly controlling the sequence of the individual steps in the data transfer, the time delay can be reduced to a minimum.

According to an advantageous enhancement of the invention, it is proposed that the first computer be located in a first computer network. The first computer is preferably designed as a server for a computer network, and the first computer network is preferably designed as an internal enterprise-wide network. In such in-house computer networks, data security is especially important. Many enterprises have now

begun to handle a large portion of their company business completely electronically via their in-house computer networks. Unauthorized access to these computer networks from the outside or manipulation of the data contained therein can do extremely serious damage to the enterprise. In this respect the data link of the computer system according to the invention represents a remedy.

According to another advantageous enhancement of the computer system according to the invention, it is proposed that the second computer be located in a second computer network. The second computer is preferably designed as an Internet server, and the second computer network is preferably the Internet. Attacks by third parties across the Internet on the in-house computer networks connected to the Internet pose a particularly serious threat to data security in such enterprises.

When data are transmitted from a computer in an in-house computer network to a computer on the Internet, data security is of especially great importance since theoretically millions of Internet users could penetrate the in-house computer network without permission and manipulate the data stored therein. Moreover, in the world-wide Internet, which is accessible to everyone, there are many so-called viruses and Trojan horses in circulation that can pose a serious threat to the data stores of the enterprise once they have penetrated the enterprise's in-house computer network. The data link of the computer system according to the invention offers a suitable platform for ensuring secure and reliable protection against viruses, etc.. To accomplish this, a suitable means of analysis must be present in the data link, preferably in the lock element.

According to another advantageous enhancement of the invention, it is proposed that there be a third computer in the first computer network and that there be a fourth computer in the lock element.

The fourth computer may be located inside the lock element in its own network environment which, however, must be

physically separated from both the first computer network and from the second computer network. The idea of the fourth computer is to carry out various analysis processes within the lock element and thus to provide a certain amount of pre-selection. The third computer is also connected to the ISDN connection. The fourth computer is not connected directly to the ISDN-NTBA configuration since it is connected (via a separate network) to the lock element.

To transmit data, the data to be transmitted is sent from the first computer to the third computer. In the third computer the data is analyzed and checked. The analysis of the data to be sent can be done on the first computer. Only if the check has revealed no anomalies will the first flood gate be opened. Then the data is sent from the third computer to the lock element, and then the first flood gate is closed again. Only after the first flood gate is completely closed will the second flood gate be opened. Then the data will be sent from the lock element to the second computer, and then the second flood gate will again be closed.

To receive data, the second flood gate is opened and the data to be received are transmitted from the second computer to the gate element. Then the second flood gate is closed, and only once it has been completely closed will the first flood gate be opened. Then the data will be sent from the lock element to the third computer. Then the first flood gate will be closed, and then the third computer will check and analyze the data. Only when the check has revealed no anomalies will the data be sent from the third computer to the first computer.

The fact that the two computers and the two computer networks are physically separated from one another prevents on-line attacks from the outside against one of the computers in a computer network and makes it impossible to manipulate from the outside the analysis processes that are carried out in the third computer.

It is advantageous for the link between the first computer and the second computer to be structured as an Integrated Services Digital Network (ISDN) connection according to the Net Terminal Base Adapter (NTBA) Standard.

5 As another way of accomplishing the object of this invention, it is proposed, based on the process of the type mentioned above, that the data link be designed as an Integrated Services Digital Network (ISDN) connection according to the Net Terminal Base Adapter (NTBA) Standard, that the data from the
10 first computer be transferred via a third computer that is located in a common computer network with the first computer, and via the lock element to the second computer, and vice versa, and that to establish a data link and to transfer data between the third computer and the lock element and between the second
15 computer and the lock element, the two B-channels of an ISDN connection according to the NTBA Standard be used.

According to an advantageous enhancement of this invention, it is proposed that an analysis of the data to be transferred be performed in the third computer. The analysis
20 should preferably be performed according to semantic criteria.

At no time during the data transfer is the third computer directly connected to the second computer network or to the second computer. This is prevented by the flood gates, which are never opened at the same time when data are being
25 transferred. Thus it is impossible for unauthorized third parties to gain direct access to the third computer during a data transfer or to manipulate the analysis mechanism contained in the third computer.

In the lock element itself, by contrast, no analysis
30 of the data to be transferred is performed since, in order to transfer data, the lock element is in direct contact with the second computer network or with the second computer for a certain length of time. During this period of time, an analysis mechanism contained in the lock element could be manipulated by
35 unauthorized third parties.

If the data is sent via the opened first flood gate from the lock element to the third computer, infected data files, i.e., data files that contain viruses or Trojan horses, could admittedly be stored in the third computer. However, here there is a decisive difference compared to the operation of known firewalls. Instead of carrying out all analysis processes on line, the third computer is able, depending on the desired scalable depth and duration of the analysis, to examine and, optionally, to destroy the passive data that the lock element has received from the second computer network without risk of access from the outside or of interactive manipulation.

Within the framework of the semantic analysis of the data, it is possible to check whether the content of certain data files can leave the in-house computer network and go outside. During the semantic analysis of data files, in particular these systems for electronic communication (e-mail) are checked since documents of any kind can be dispatched over them. In the process according to the invention, it is possible to perform a semantic analysis since the analysis times can be structured in a flexible manner.

According to a preferred embodiment of invention, to send data it is proposed:

- that the data to be sent be sent from the first computer to the third computer,
- that the third computer analyze and check the data,
- that the first flood gate be opened,
- that the data be sent from the third computer (INS) to the gate element,
- that the first flood gate be closed,
- that the second flood gate be opened,
- that the data be sent from the lock element to the second computer, and
- that the second flood gate be closed.

According to a preferred embodiment of invention, to receive data it is proposed:

- that the second flood gate be opened,
- that the data to be received be sent from the second computer to the lock element,
- that the second flood gate be closed,
- that the first flood gate be opened,
- that the data be sent from the lock element to the third computer,
- that the first flood gate be closed,
- that the third computer analyze and check the data,

and

- that the data be sent from the third computer to the first computer.

The first flood gate is preferably driven by the third computer, and the second flood gate is preferably driven by the lock element.

According to an advantageous enhancement of the process according to the invention, the data to be received is sent from the lock element to the third computer at the time when the data to be sent is also sent from the third computer to the lock element. In this way two different data transfer steps can be carried out in one time-step. A prerequisite for this is that the positions of the flood gates be the same at this point in time. In the case of this enhancement, specifically the first flood gate is opened and the second flood gate is closed.

According to another advantageous enhancement of the invention, the data to be received is sent from the second computer to the lock element at the point in time when the data to be sent is also sent from the lock element to the second computer. At this point in time, the first flood gate is closed and the second flood gate is opened.

According to another enhancement of the process according to the invention, the analysis of the received data is carried out at the same time as the data to be sent is analyzed. The analysis of the data is preferably done in the third and/or

the fourth computer. The analysis of the data to be sent can, however, also be carried out in the first computer.

In principle, it is possible in one time-step to carry out the data transfer steps in which the positions of the flood gates are the same.

BRIEF DESCRIPTION OF THE DRAWINGS

A preferred embodiment of the invention in question is explained in greater detail below based on the drawing.

Figure 1 shows a computer system according to the invention.

DETAILED DESCRIPTION OF THE INVENTION

Figure 1 shows a data link for the purposes of transferring data between first computer 1 and a second computer 2. In the data link there is a lock element 6, whereby a first flood gate 7 is located between first computer 1 and lock element 6 and a second flood gate 8 is located between second computer 2 and lock element 6. First flood gate 7 is closed when second flood gate 8 is opened, and, vice versa, second flood gate 8 is closed when first flood gate 7 is opened.

First computer 1 is located in a first computer network 9, whereby first computer 1 is designed as a server for a computer network and first computer network 9 is designed as an enterprise-wide in-house computer network. Second computer 2 is located in a second computer network 10, whereby second computer 2 is designed as an Internet server and second computer network 10 is the Internet. In first computer network 9 there is a third computer 3, and in lock element 6 there is a fourth computer 4. The purpose of fourth computer 4 is to carry out various analysis processes inside lock element 6 and thus to perform a certain amount of pre-selection.

In order now to send data from first computer 1 to second computer 2, the data to be sent is first sent from first

computer 1 to third computer 3. In third computer 3, the data is analyzed and checked. The analysis is preferably carried out based on semantic criteria. Only if the analysis has revealed no anomalies will first flood gate 7 be opened. Then the data will be sent from third computer 3 to lock element 6, and then first flood gate 7 will be closed again. Only after first flood gate 7 is completely closed will second flood gate 8 be opened. Then the data is sent from lock element 6 to second computer 2, and then second flood gate 8 is closed again.

In order for data from second computer 2 to be received by first computer 1, second flood gate 8 is first opened and the data to be received is sent from second computer 2 to lock element 6. Then second flood gate 8 is closed, and only when it is completely closed will first flood gate 7 be opened. Then the data is sent from lock element 6 to third computer 3. Then first flood gate 7 is closed. Then third computer 3 checks and analyzes the data. Only if the analysis has revealed no anomalies will the data be sent from third computer 3 to first computer 1.

Lock element 6 between first computer 1 and second computer 2 ensures a physical separation between first computer 1 and second computer 2 and between both computer networks 9, 10. This makes it possible to ward off on-line attacks from the outside on first computer 1 in computer network 9, and it is impossible to manipulate from the outside the analysis processes that are carried out in third computer 3 since a direct attack from the outside on third computer 3 is not possible because of lock element 6.

The data link between first computer 1 and second computer 2 is designed as an Integrated Services Digital Network (ISDN) connection 5 according to the Net Terminal Base Adapter (NTBA) Standard. Third computer 3 is also connected to ISDN connection 5. Fourth computer 4 is not directly attached to the ISDN-NTBA since it is connected (via a separate network) to lock element 6. In this way the function of lock element 6 can be

implemented in a simple and efficient way. ISDN connection 5 according to the NTBA Standard has two bearer channels (B-channels) and a data channel (D-channel). Thus an ISDN-NTBA configuration allows a maximum of two data transfer links at one time.

If third computer 3 sets up a link with lock element 6 in order to transfer data, two B-channels are required for this purpose: lock element 6 is dialed up via the one B-channel, and via the second B-channel the data transfer link to lock element 6 is established. ISDN connection 5 that is established between third computer 3 and lock element 6 corresponds to a flood-gate position in which first flood gate 7 is opened and second flood gate 8 is closed. For technical reasons, therefore, it is not possible to connect lock element 6 to second computer 2 (second flood gate 8 is opened) at the same time in ISDN-NTBAs.

If, on the other hand, a link already exists between second computer 2 in second computer network 10 and lock element 6 (second flood gate 8 is opened), third computer 3 can no longer establish a connection with lock element 6 (first flood gate 7 cannot be opened) since, as explained above, this requires both B-channels of the ISDN-NTBA.

WHAT IS CLAIMED IS:

1. A computer system between at least a first computer (1) and a second computer (2) including a data link between the first computer (1) and the second computer (2), for the purpose of transmitting data between the first computer (1) and the second computer (2), comprising:

a lock element (6) provided in the data link between the first computer (1) and the second computer (2);

a first flood gate (7) provided between the first computer (1) and said lock element (6);

a second flood gate (8) provided between said lock element (6) and the second computer (2);

a third computer (3) provided between the first computer (1) and said first flood gate (7);

wherein the data link is an Integrated Service Digital Network (ISDN) connection according to the Net Terminal Base Adaptor (NTBA) standard, said ISDN connection including two B-channels for the establishment of a data transfer between the first computer (1) and said first flood gate (7) accomplished through said third computer (3), and further wherein said data transfer between said third computer (3) and said lock element (6) as well as said data transfer between said lock element (6) and the second computer (2) takes place through said two B-channels of said ISDN connection according to the NTBA standard, and further wherein said first flood gate (7) is closed when said second flood gate (8) is opened and said first flood gate (7) is opened when said second flood gate (8) is closed.

2. The computer system according to Claim 1, wherein the first computer (1) is arranged in a first computer network (9).

3. The computer system according to Claim 1, wherein the second computer (2) is arranged in a second computer network (10).

4. The computer system according to Claim 2, wherein the first computer (1) is designed as a server for a computer network and first computer network (9) is designed as an in-house enterprise-wide computer network.

5. The computer system according to Claim 3, wherein the second computer (2) is designed as an Internet server and said second computer network (10) is the Internet.

6. The computer system according to Claim 4, wherein said third computer (3) is arranged in said first computer network (9) and further including a fourth computer (4) is arranged in said lock element (6).

7. A process for transferring data between a first computer (1) and a second computer (2) through a third computer (3) via a data link through first and second flood gates and a lock element (6) provided between said first and second flood gates, said third computer provided between said first computer and said first flood gate, wherein said data link is designed as an Integrated Services Digital Network (ISDN) connection according to the Net Terminal Base Adapter (NTBA) standard, said ISDN connection including two B-channels for the establishment of a data transfer between said first computer (1) and said first flood gate (7) accomplished through said third computer (3), and further wherein said data transfer between said third computer (3) and said lock element (6) as well as said data transfer between said lock element (6) and said second computer (2) takes place through said two B-channels of said ISDN connection according to the NTBA standard, comprising the steps of:

transferring data from said second computer (2) to said lock element (6) only when said second flood gate (8) is opened and said first flood gate (7) is closed.

9. The process according to Claim 8, wherein said analyzing step is carried out based on semantic criteria.

11. The process according to Claim 7, wherein, for sending data including the steps of:

```
analyzing data in said third computer;
opening said first flood gate (7);
sending data from said third computer (3) to said
lock element (6);
```

12. The process according to Claim 7, for receiving data including the steps of:

opening said second flood gate (8);

sending data received from said second computer (2) to said lock element (6);
closing said second flood gate (8);
opening said first flood gate (7);
sending data from said lock element (6) to said third computer (3);
closing said first flood gate (7);
analyzing and checking the data in said third computer; and
sending data from said third computer (3) to said first computer (1).

13. The process according to Claim 11, wherein the data to be received is sent from said lock element (6) to said third computer (3) at the point in time when the data to be sent is also being sent from said third computer (3) to said lock element (6).

14. The process according to Claim 12, wherein the data to be received is sent from said lock element (6) to said third computer (3) at the point in time when the data to be sent is also being sent from said third computer (3) to said lock element (6).

15. The process according to Claim 11, wherein the data to be received is sent from said second computer (2) to said lock element (6) at the point in time when the data to be sent is also being sent from said lock element (6) to said second computer (2).

16. The process according to Claim 12, wherein the data to be received is sent from said second computer (2) to said lock element (6) at the point in time when the data to be sent is also being sent from said lock element (6) to said second computer (2).

17. The process according to Claim 11, wherein the analysis of the received data is carried out at the same time as the data to be sent is being analyzed.

18. The process according to Claim 12, wherein the analysis of the received data is carried out at the same time as the data to be sent is being analyzed.

102220" 66071460

ABSTRACT OF THE DISCLOSURE

The invention relates to a data link between a first computer (1) and a second computer (2) for transmitting data. The aim of the invention is to provide a data link which is configured in such a way that non authorized third parties are not able to influence said data transmission or to find their way from the outside to one of the computers and to tamper with data. The inventive data link comprises a lock element (6), a first lock gate (7) being placed between said first computer (1) and said lock element (6) and a second lock gate (8) being placed between said second computer (2) and said lock element (6). The first lock gate (7) is closed when the second one (8) is opened and vice-versa.

102220 66011200

1 / 1

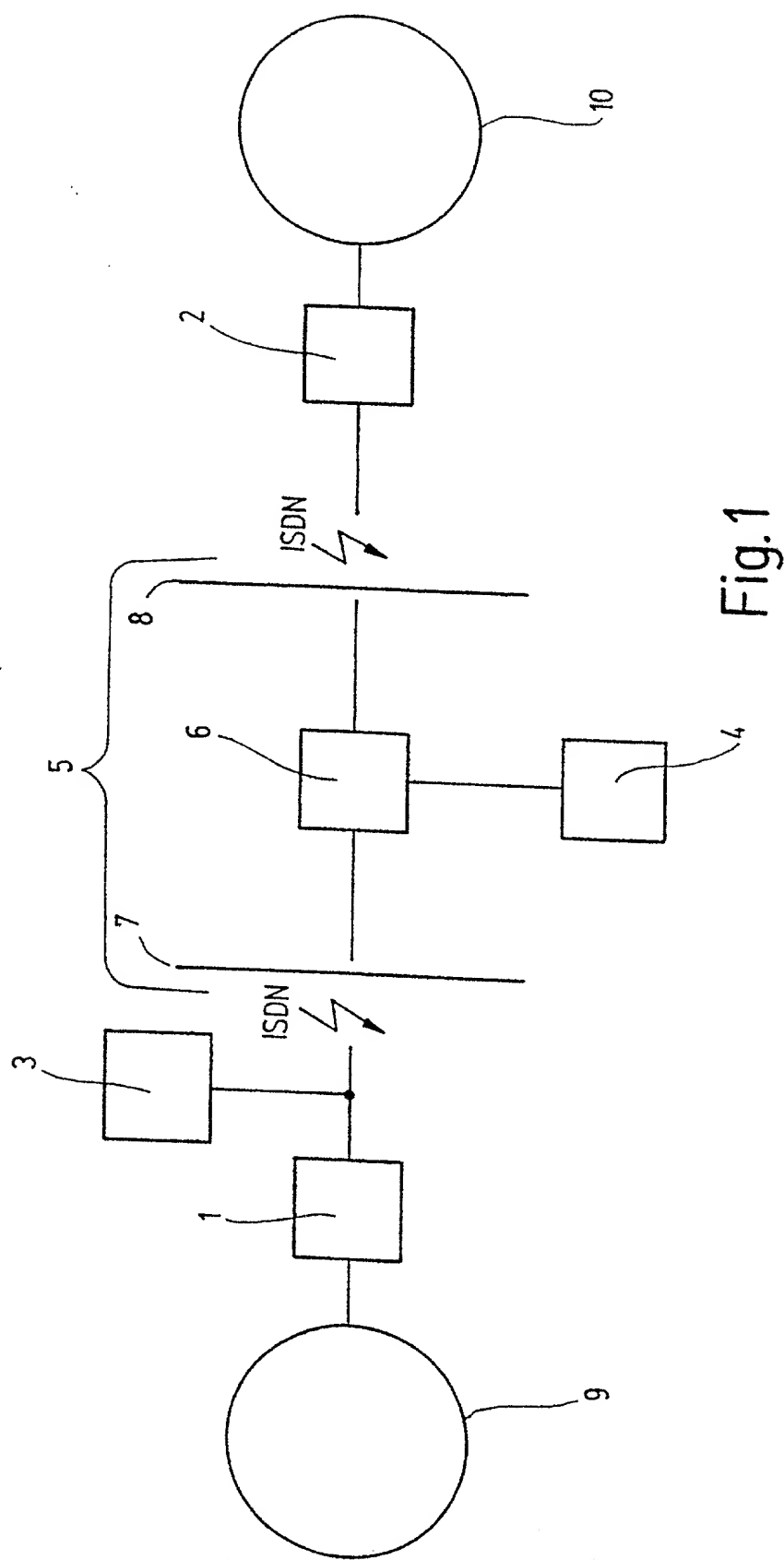


Fig.1

FIG. 1

Declaration and Power of Attorney for Patent Application

Erklärung für Patentanmeldungen mit Vollmacht

German Language Declaration

Als nachstehend benannter Erfinder erkläre ich hiermit an Eides Statt:

daß mein Wohnsitz, meine Postanschrift und meine Staatsangehörigkeit den im nachstehenden nach meinem Namen aufgeführten Angaben entsprechen, daß ich nach bestem Wissen der ursprüngliche, erste und alleinige Erfinder (falls nachstehend nur ein Name angegeben ist) oder ein ursprünglicher, erster und Miterfinder (falls nachstehend mehrere Namen aufgeführt sind) des Gegenstandes bin, für den dieser Antrag gestellt wird und für den ein Patent für die Erfindung mit folgendem Titel beantragt wird:

deren Beschreibung hier beigefügt ist, es sei denn (in diesem Falle Zutreffendes bitte ankreuzen), diese Erfindung

- ☐ wurde angemeldet am _____ unter der US-Anmeldenummer oder unter der Internationalen Anmeldenummer im Rahmen des Vertrags über die Zusammenarbeit auf dem Gebiet des Patentwesens (PCT) _____ und am _____ abgeändert (falls zutreffend).

Ich bestätige hiermit, daß ich den Inhalt der oben angegebenen Patentanmeldung, einschließlich der Ansprüche, die eventuell durch einen oben erwähnten Zusatzantrag abgeändert wurde, durchgesehen und verstanden habe.

Ich erkenne meine Pflicht zur Offenbarung jeglicher Informationen an, die zur Prüfung der Patentfähigkeit in Einklang mit Titel 37, Code of Federal Regulations, § 1.56 von Belang sind.

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

Data Link between Two Computers, and Method for Transmitting Data between Said Computers

the specification of which is attached hereto unless the following box is checked:

- ☐ was filed on _____ as United States Application Number or PCT International Application _____ and was amended on _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56.

German Language Declaration

Ich beanspruche hiermit ausländische Prioritätsvorteile gemäß Title 35, US-Code, § 119 (a)-(d), bzw. § 365(b) aller unten aufgeführten Auslandsanmeldungen für Patente oder Erfinderurkunden, oder §365(a) aller PCT internationalen Anmeldungen, welche wenigstens ein Land ausser den Vereinigten Staaten von Amerika benennen, und habe nachstehend durch ankreuzen sämtliche Auslandsanmeldungen für Patente bzw. Erfinderurkunden oder PCT internationale Anmeldungen angegeben, deren Anmeldetag dem der Anmeldung, für welche Priorität beansprucht wird, vorangeht.

Prior Foreign Applications
(Frühere ausländische Anmeldungen)

<u>198 3 8 253.7</u>	<u>Germany</u>
(Number)	(Country)
(Nummer)	(Land)
(Number)	(Country)
(Nummer)	(Land)

Ich beanspruche hiermit Prioritätsvorteile unter Title 35, US-Code, § 119(e) aller US-Hilfsanmeldungen wie unten aufgezählt.

<u>(Application No.)</u>	<u>(Filing Date)</u>
(Aktenzeichen)	(Anmeldetag)
<u>(Application No.)</u>	<u>(Filing Date)</u>
(Aktenzeichen)	(Anmeldetag)

Ich beanspruche hiermit die mir unter Title 35, US-Code, § 120 zustehenden Vorteile aller unten aufgeführten US-Patentanmeldungen bzw. § 365(c) aller PCT internationalen Anmeldungen, welche die Vereinigten Staaten von Amerika benennen, und erkenne, insofern der Gegenstand eines jeden früheren Anspruchs dieser Patentanmeldung nicht in einer US-Patentanmeldung, bzw. PCT internationalen Anmeldung in einer gemäß dem ersten Absatz von Title 35, US-Code, § 112 vorgeschriebenen Art und Weise offenbart wurde, meine Pflicht zur Offenbarung jeglicher Informationen an, die zur Prüfung der Patentfähigkeit in Einklang mit Title 37, Code of Federal Regulations, § 1.56 von Belang sind und die im Zeitraum zwischen dem Anmeldetag der früheren Patentanmeldung und dem nationalen oder im Rahmen des Vertrags über die Zusammenarbeit auf dem Gebiet des Patentwesens (PCT) gültigen internationalen Anmeldetags bekannt geworden sind.

<u>(Application No.)</u>	<u>(Filing Date)</u>
(Aktenzeichen)	(Anmeldetag)
<u>(Application No.)</u>	<u>(Filing Date)</u>
(Aktenzeichen)	(Anmeldetag)

Ich erkläre hiermit, daß alle in der vorliegenden Erklärung von mir gemachten Angaben nach bestem Wissen und Gewissen der Wahrheit entsprechen, und ferner daß ich diese eidesstattliche Erklärung in Kenntnis dessen ablege, daß wissentlich und vorsätzlich falsche Angaben oder dergleichen gemäß § 1001, Title 18 des US-Code strafbar sind und mit Geldstrafe und/oder Gefängnis bestraft werden können und daß derartige wissentlich und vorsätzlich falsche Angaben die Rechtswirksamkeit der vorliegenden Patentanmeldung oder eines aufgrund deren erteilten Patentes gefährden können.

I hereby claim foreign priority under Title 35, United States Code §119(a)-(d) or § 365(b) of any foreign application(s) for patent inventor's certificate, or § 365(a) of any PCT International application which designated at least one country other than the United States, list below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or PCT International application having a filing date before that of the application on which priority is claimed.

<u>22/08/98</u>	<u>Priority Not Claimed</u>
(Day/Month/Year Filed)	<u>Priorität nicht beansprucht</u>
(Tag/Monat/Jahr der Anmeldung)	<input type="checkbox"/>
(Day/Month/Year Filed)	<input type="checkbox"/>
(Tag/Monat/Jahr der Anmeldung)	

I hereby claim the benefit under Title 35, United States Code, § 119(e) of any United States provisional application(s) listed below.

I hereby claim the benefit under Title 35, United States Code, § 120 of United States application(s), or § 365(c) of any PCT International application designating the United States, listed below and, insofar as subject matter of each of the claims of this application is not disclosed by the prior United States or PCT International application in the manner provided by the first paragraph of Title 35, United States Code, § 111 acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of this application.

<u>(Status) (patented, pending, abandoned)</u>
(Status) (patentiert, schwebend, aufgegeben)
<u>(Status) (patented, pending, abandoned)</u>
(Status) (patentiert, schwebend, aufgegeben)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine, imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

German Language Declaration

VERTRETUNGSVOLMACHT: Als benannter Erfinder beauftrage ich hiermit den (die) nachstehend aufgeführten Patentanwalt (Patentanwälte) und/oder Vertreter mit der Verfolgung der vorliegenden Patentanmeldung sowie mit der Abwicklung aller damit verbundenen Angelegenheiten vor dem US-Patent- und Markenamt: (Name(n) und Registrationsnummer(n) auflisten)

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith: (list name and registration number)

Mitchell B. Wasson Reg. No. 27,408
 Martin P. Hoffman Reg. No. 22,261
 Stewart L. Gitler Reg. No. 31,256
 Christopher J. McDonald Reg. No. 41,533

Postanschrift:

Send Correspondence to: **HOFFMAN, WASSON & GITLER, P.C.**
 2381 Jefferson Davis Highway, Suite 522
 Arlington, VA 22202

Telefonische Auskünfte: (Name und Telefonnummer)

Direct Telephone Calls to: (name and telephone number)

Mitchell B. Wasson (703) 415-0100

Vor- und Zuname des einzigen oder ersten Erfinders	1-00	Full name of sole or first inventor	Thomas ENGEL
Unterschrift des Erfinders	Datum	Inventor's signature	Date 14/02/01
Wohnsitz		Residence	Saarburger Strasse 18, D-54294 Trier, Germany DEX
Staatsangehörigkeit		Citizenship	German
Postanschrift		Post Office Address	Same as above
Vor- und Zuname des zweiten Miterfinders (falls zutreffend)	2-00	Full name of second joint inventor, if any	Ernst-Georg HAFFNER
Unterschrift des zweiten Erfinders	Datum	Second Inventor's signature	Date 14/02/01
Wohnsitz		Residence	Poststrasse 5, D-54413 Gusenburg, Germany DEX
Staatsangehörigkeit		Citizenship	German
Postanschrift		Post Office Address	Same as above

(Im Falle dritter und weiterer Miterfinder Miterfinder sind die entsprechenden Informationen und Unterschriften hinzuzufügen.)

(Supply similar information and signature for third & subsequent joint inventors.)

14.02.01 15:51 AN-006519755112

VON-DREISS PATENTANWÄLTE

T-671 P.05/07 F-353

PTO/SB/101

Approved for use through 9/30/98. OMB 065
Patent and Trademark Office: U.S. DEPARTMENT OF COMM.

Under the Reduction Act of 1996, no persons are required to respond to a collection of information unless it displays a valid OMB control nu.

German Language Declaration

VERTRETUNGSVOLMACHT: Als benannter Erfinder beauftrage ich hiermit den (die) nachstehend aufgeführten Patentanwalt (Patentanwälte) und/oder Vertreter mit der Verfolgung der vorliegenden Patentanmeldung sowie mit der Abwicklung aller damit verbundenen Angelegenheiten vor dem US-Patent- und Markenamt: (Name(n) und Registrationsnummer(n) auflisten)

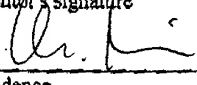
POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith: (list name and registration number)

Postanschrift:

Send Correspondence to:

Telefonische Auskünfte: (Name und Telefonnummer)

Direct Telephone Calls to: (name and telephone number)

Vor- und Zuname des einzigen oder ersten Erfinders 3-00		Full name of third joint inventor Christoph MEINEL	
Unterschrift des Erfinders	Datum	Inventor's signature 	Date 14.2.01
Wohnsitz		Residence Am Hohlweg 16, D-54317 Gusterath, Germany GEX	
Staatsangehörigkeit		Citizenship German	
Postanschrift		Post Office Address Same as above	
Vor- und Zuname des zweiten Miterfinders (falls zutreffend)		Full name of second joint inventor, if any	
Unterschrift des zweiten Erfinders	Datum	Second Inventor's signature	Date
Wohnsitz		Residence	
Staatsangehörigkeit		Citizenship	
Postanschrift		Post Office Address	

In Falle dritter und weiterer Miterfinder Miterfinder sind die tsprechenden Informationen und Unterschriften (Supply similar information and signature for third and subsequent joint inventors.)
zuzufügen.)